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Ryan, Mason Lewis, LLP
1300 Post Road
Suite 205
Fairfield, CT 06430

EXAMINER	
SPOONER, LAMONT M	

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/713,075
Filing Date: November 15, 2000
Appellant(s): BROWN ET AL.

Kevin Mason
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 12/05/2005 appealing from the Office action mailed 9/9/05.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

This appeal involves claims 1-12.

(4) Status of Amendments After Non- Final

The appellant's statement of the status of amendments after non-final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

5,696,962	Kupiec	12-9-97
5,933,822	Braden-Harder et al.	8-3-99

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 6-8, are 10 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Kupiec (US 5,696,962).

As per **claims 1 and 7**, Kupiec discloses a method for selecting answers to natural language questions from a collection of textual documents comprising the steps of:

extracting scoring features from a candidate list of passages of possible answers (C.31.lines 34-36, lines 37-65);

scoring the possible answers using the extracted features and a feature scoring function (C.31.lines 60-63); and

presenting the best scoring possible answer to the user with context from the passage containing the answer (C.32. Table 8, see also, C.31.Table 7, see also C.37.lines 38-53).

(The method is implemented on computer apparatus, inherently requiring the modules for performing the above features, see Fig. 1, C.5.lines 53-C.6.line 44).

As per **claims 2 and 8**, Kupiec disclose all of the limitations of claim 1, upon which claim 2 depends. Kupiec further disclose:

the features used to score possible answers consists of one or more of the following features: a semantic type of a current suspected answer (ibid, C.29.lines 25-53), a position of the suspected answer among all suspected answers within all document passages, a position of the

suspected answer among all suspected answers within the given passage, a number of suspected answers of a given semantic type retrieved within a given passage, a number of words in a suspected answer that do not appear in the user question, a position of the semantic type in the list of potential semantic types for the question, an average distance in words between the beginning of the potential answer and the words in the question that also appear in the passage, a passage relevance as computed by the information retrieval engine, a frequency of a given potential answer on the list, a semantic relation between words from the question and words from the potential answer, and a strength score that is a function of the relevance score

As per **claim 3**, Kupiec disclose all of the limitations of claim 2, upon which claim 3 depends and further discloses:

the feature scoring function is a linear combination of weighted features.(C.31.lines 16-45, 60-63-his degree and number of matches, and sum of scores as linear scoring)

As per **claim 4**, Kupiec and Diamond disclose all of the limitations of claim 3, upon which claim 4 depends. Kupiec further disclose:

the parameters of the scoring function are manually determined (C.19.lines 51-55).

As per **claim 6**, Kupiec discloses all of the limitations of claim 1, upon which claim 6 depends. Kupiec further disclose:

the candidate list of passages of possible answers is obtained from the collection of documents using an information retrieval engine (C.33.lines 25-33, C.34.line 56-C.35.line 5).

As per **claim 10**, Kupiec disclose all of the limitations of claim 7, upon which claim 10 depends. Kupiec further disclose:

the answer selection module selects the answer with the best score obtained from the feature combination module (C.16.lines 35-40).

As per **claim 11**, Kupiec disclose all of the limitations of claim 7, upon which claim 11 depends. Kupiec further disclose:

the answer presentation module shows the top scored answer within the context as specified by a user or a system (C.16.lines 35-45).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 5, 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kupiec in view of Braden-Harder (US 5,933,822).

Kupiec and Braden-Harder are analogous art in that they are of the search and retrieval field.

As per **claims 5 and 9,** Kupiec discloses all of the limitations of claim 3, upon which claim 5 depends. Kupiec but lack teaching the parameters of the scoring function are learned by a machine learning algorithm

However, Braden-Harder teaches the parameters of the scoring function are learned by a machine learning algorithm (Fig. 8A and 8B, C.17.lines 16-67, C.18.lines 1-24-the parameters, and weighting scheme is machine algorithm determined, C.25.lines 41-48-his learning mechanism, and weights as the relate to scoring). Therefore, at the time of the invention, it would have been obvious to modify Kupiec's scoring with a with Braden-Harder's learned scoring. The motivation for doing so would have been to have a "dynamic" and adaptive or varying scoring mechanism (C.25.lines 41-43), for particular attributes.

As per **claim 12**, Kupiec teaches extracting features from questions and corresponding possible answers, applying scoring feature functions to

score each possible answer phrase, selecting... and displaying answers phrases, (see claim 1, and C.31-C.33), but lacks explicitly teaching:

determining a feature scoring function during a training phase via a machine learning algorithm applied to a set of training questions, corresponding answers passages, and certain extracted features; and

during an execution phase, extracting certain features from questions and correspond possible answer phrases, applying the feature scoring function determined during the training phase to score each possible answer phrase, selecting one or more of the best scoring answer, and displaying the answer to the user with optional additional context from the answer passages

Braden-Harder further discloses computer program product that performs the steps of:

determining a feature scoring function during a training phase either manually or via a machine learning algorithm (C.26.lines 41-48) applied to a set of training questions, corresponding answers passages, and certain extracted features (C.15.lines 25-63-possible answers-stored for use in subsequent..., C.16.lines 19-47-extracting scoring features, C.16.lines 1-46); and

during an execution phase, extracting certain features from questions and correspond possible answer phrases, applying the feature scoring function determined during the training phase to score each possible answer phrase, selecting one or more of the best scoring answer, and displaying the answer to the user with optional additional context from the answer passages (C.15.lines 25-63-document records/answers-subsequent use, C.22.lines 23-26-the documents, Fig. 8b-Documents 1, 2, and 3-"Recipe containing artichoke hearts and octopus", "article about octopi", "article about deer", respectively- and respective scores are shown in the Fig. 8b. C.16.line 19-46-, C.16.lines 35-40-documents/answers are displayed to the user-inherently requiring the selection thereof-the documents are interpreted as the answer), but lacks explicitly teaching the answers as answer phrases. Therefore, at the time of the invention, it would have been obvious to modify Kupiec with the training feature. The motivation for doing so would have been to simply access necessary pre-computed computational data, instead of having to compute during answer retrieval (C.15.lines 55-60).

(11) Response to Argument

In response to Applicant's arguments, p.4.lines 1-10, regarding the applicant's invention directed towards an answer, a snippet of information, which isn't an document, "answers are not documents, but are short snippets...". Kupiec expressly teaches, C.32. Table 8, see also, C.31.Table 7, see also C.37.lines 38-53, of an explicit answer to a question, i.e. Table 7, "Who was the ..." answer in Table 8, "Mailer, Norman."

In response to Applicant's arguments, p.4.lines 18, 19. "Kupiec does not disclose or suggest that answer scores are based on scoring features of possible answers." However, the Examiner cannot concur. As admitted by applicant, Kupiec teaches, "Answer hypotheses are scored on a per-article basis, according to the sum of the scores of the articles in which they occur (Kupiec, C.32.lines 60-62). That is, each answer hypothesis, determined by answer extraction (C.31.lines 52-55), Answer extraction begins by finding **all simple noun phrases** (as the features of the possible answers) contained in the match sentences (these are features of possible answers/sentences, or snippets and NOT documents) of the primary documents. Each answer hypotheses is scored on a per article basis, which is the score **of the answer hypothesis, which is not a document,**

each answer hypothesis being scored based on an article-(**the article is scored based on the degree and number of matches with the phrase of the input question which includes features of the answer)**, according to the sums of the scores of the articles in which they occur. More specifically, the article has a score, and the **answer hypothesis also has a score, based on scoring features of possible answers.**

In response to applicant's arguments against the references individually, more specifically, regarding Braden-Harder, p.4.lines 24-27 "Braden-Harder does not attempt to score answers and present answers, as defined in the present invention and as would be understood by a person of ordinary skill in the art, and does not attempt to present answers with context from a relevant passage., one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references, wherein Braden-Harder is not relied upon to teach these elements. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to applicant's arguments regarding claims 5 and 9, p.5 lines 25 and 26, "Appellants could find no disclosure or suggestion by

Braden-Harder, however, that "the parameters of the scoring function are learned by a machine learning algorithm." Close inspection of Braden-Harder's scoring, as previously cited, (Fig. 8A, 8B, C.17.lines 16-67, C.18.lines 1-24-which this section in depth discusses the parameters, and weighting scheme, which define the scoring), Braden-Harder explicitly then teaches, C.25.lines 41-48, of a learning mechanism, as previously cited, "Rather than using fixed weights...based upon learned experiences", these values, in the machine learned environment is his machine learning algorithm, (for example and especially a Bayesian or **neural network**).

Respectfully submitted,

Lamont Spooner
Art Unit 2654

lms
September 18, 2006

Conferees
Lamont Spooner
Richemond Dorvil
Tālivaldis Šmits

RICHEMOND DORVIL
SUPERVISORY PATENT EXAMINER